

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A storage device controller comprising:

a plurality of channel control portions each including a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over; and

a processing portion configured to decide that data regarding at least one IP address set for said channel control portions to provide NAS service to said information processors are stored in a shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by any other channel control portion belonging to the same group to carry out fail-over, wherein said storage device controller comprises a management table for storing synchronization type information and synchronization method information based on the type of data processed by said channel control portions, wherein said channel control portions are clustered into a plurality of groups associated with the fail-over thereby making it possible to send updated inherited data including an IP address to be inherited to channel control portions within the same group, whereby a successor channel control portion belonging to the same group as a predecessor channel control portion takes over, by referring to said management table based on the type of data processed by said predecessor channel control portion, the IP address of said the predecessor channel control portion to receive data that have been previously received by said the predecessor channel control portion prior to failure thereof.

2. (Currently amended) A storage device controller comprising:

a plurality of channel control portions each including a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over; and

a processing portion configured to decide that data regarding at least one IP address set for said channel control portions to provide NAS service to said information processors are stored in a shared memory which is contained in said storage device controller and which can be accessed commonly by said channel control portions to carry out fail-over, wherein said storage device controller comprises a management table for storing synchronization type information and synchronization method information based on the type of data processed by said channel control portions, wherein said channel control portions are clustered into a plurality of groups associated with the fail-over thereby making it possible to send updated inherited data including an IP address to be inherited to channel control portions within the same group, whereby a successor channel control portion belonging to the same group as a predecessor channel control portion takes over, by referring to said management table based on the type of data processed by said predecessor channel control portion, the IP address of said a predecessor channel control portion to receive data that have been previously received by said the predecessor channel control portion prior to failure thereof.

3. (Currently amended) A storage device controller comprising:

a plurality of channel control portions each including a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over; and

a processing portion configured to decide that data regarding at least one IP address set for said channel control portions to provide NAS service to said information processors are sent to another channel control portion belonging to the same group, through a network connecting said channel control portions to one another, to carry out fail-over, wherein said storage device controller comprises a management table for storing synchronization type information and synchronization method information based on the type of data processed by said channel control portions, wherein said channel control portions are clustered into a plurality of groups associated with the fail-over thereby making it possible to send updated inherited data including an IP address to be inherited to channel control portions within the same group, whereby said another channel control portion belonging to the same group as a predecessor channel control portion takes over, by referring to said management table based on the type of data processed by said predecessor channel control portion, the IP address of said the predecessor channel control portion to receive data that have been previously received by said the predecessor channel control portion prior to failure thereof.

4. (Original) A storage device controller according to Claim 1, wherein:
local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively; and

said processing portion further decides that said data are stored in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data.

5. (Original) A storage device controller according to Claim 1, wherein:
local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively;

said processing portion further decides that said data are stored in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data;

said storage device controller further comprises an inherited data reference table on which reference destinations of said data are recorded; and

said processing portion reads said data from any one of said shared volume, said shared memory and said local volumes on the basis of said reference destinations of said data recorded in said inherited data reference table.

6. (Original) A storage device controller according to Claim 3, wherein said processing portion sends said data to all said channel control portions in said storage device controller through said network when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

7. (Original) A storage device controller according to Claim 1, wherein said processing portion stores said data in a second shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by all said channel control portions in said storage device controller when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

8. (Original) A storage device controller according to Claim 1, wherein said data handed over at the time of said fail-over contain at least one of NFS user data, CIFS user data, system administrator data, fail-over heart beat, IP address of a channel control portion, NFS file lock information and cluster control information.

9. (Currently amended) A control method for a storage device controller including a plurality of channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said

data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over, said control method comprising deciding that data regarding at least one IP address set for said channel control portions to provide NAS service to said information processors are stored in a shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by any other channel control portion belonging to the same group to carry out fail-over, wherein said storage device controller comprises a management table for storing synchronization type information and synchronization method information based on the type of data processed by said channel control portions, wherein said channel control portions are clustered into a plurality of groups associated with the fail-over thereby making it possible to send updated inherited data including an IP address to be inherited to channel control portions within the same group, whereby a successor channel control portion belonging to the same group as a predecessor channel control portion takes over, by referring to said management table based on the type of data processed by said predecessor channel control portion, the IP address of said ~~the~~ predecessor channel control portion to receive data that have been previously received by said ~~the~~ predecessor channel control portion prior to failure thereof.

10. (Currently amended) A control method for a storage device controller including a plurality of channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over, said control method comprising deciding that data regarding at least one IP address set for said channel control portions to provide NAS service to said information processors are stored in a shared memory which is contained in said storage device controller and which can be accessed commonly by said channel control portions to carry out fail-over, wherein said storage device controller comprises a management table for storing synchronization type information and synchronization method information based on the type of

data processed by said channel control portions, wherein said channel control portions are clustered into a plurality of groups associated with the fail-over thereby making it possible to send updated inherited data including an IP address to be inherited to channel control portions within the same group, whereby a successor channel control portion belonging to the same group as a predecessor channel control portion takes over, by referring to said management table based on the type of data processed by said predecessor channel control portion, the IP address of said a predecessor channel control portion to receive data that have been previously received by said the predecessor channel control portion prior to failure thereof.

11. (Currently amended) A control method for a storage device controller including a plurality of channel control portions each having a circuit board on which a file access processing portion for receiving file-by-file data input/output requests sent from information processors and an I/O processor for outputting I/O requests corresponding to said data input/output requests to storage devices are formed, said channel control portions being classified into groups for the sake of fail-over, said control method comprising sending data regarding at least one IP address set for said channel control portions to provide NAS service to said information processors to another channel control portion belonging to the same group, through a network connecting said channel control portions to one another, to carry out fail-over, wherein said storage device controller comprises a management table for storing synchronization type information and synchronization method information based on the type of data processed by said channel control portions, wherein said channel control portions are clustered into a plurality of groups associated with the fail-over thereby making it possible to send updated inherited data including an IP address to be inherited to channel control portions within the same group, whereby said another channel control portion belonging to the same group as a predecessor channel control portion takes over, by referring to said management table based on the type of data processed by said predecessor channel control portion, the IP address of said the predecessor channel control portion to receive data that have been previously received by said the predecessor channel control portion prior to failure thereof.

12. (Previously presented) A control method for a storage device controller according to Claim 9, wherein:

local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively; and

said control method further comprises storing said data in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data.

13. (Previously presented) A control method for a storage device controller according to Claim 9, wherein:

local volumes which are storage regions logically set on said physical storage regions provided by said storage devices and which can be accessed by said channel control portions individually and respectively are assigned to said channel control portions respectively;

said control method further comprises:

storing said data in said local volume of the other channel control portion belonging to the same group as said channel control portion updating said data;

referring to an inherited data reference table on which reference destinations of said data are recorded; and

reading said data from any one of said shared volume, said shared memory and said local volumes on the basis of said reference destinations of said data recorded in said inherited data reference table.

14. (Previously presented) A control method for a storage device controller according to Claim 11, further comprising sending said data to all said channel control portions in said storage device controller through said network when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

15. (Previously presented) A control method for a storage device controller according to Claim 9, further comprising storing said data in a second shared volume which is a storage region logically set on physical storage regions provided by said storage devices and which can be accessed commonly by all said channel control portions in said storage device controller when said data are shared data allowed to be referred to by all said channel control portions in said storage device controller.

16. (Original) A control method for a storage device controller according to Claim 9, wherein said data handed over at the time of said fail-over contain at least one of NFS user data, CIFS user data, system administrator data, fail-over heart beat, IP address of a channel control portion, NFS file lock information and cluster control information.

17. (Canceled)

18. (Canceled)